

Title (en)

APPARATUS AND METHOD FOR ACOUSTIC MONITORING OF STEAM QUALITY AND FLOW

Title (de)

VORRICHTUNG UND VERFAHREN ZUR AKUSTISCHEN ÜBERWACHUNG DER QUALITÄT UND STRÖMUNG EINES DAMPFES

Title (fr)

APPAREIL ET PROCÉDÉ DE CONTRÔLE ACOUSTIQUE DE QUALITÉ ET D'ÉCOULEMENT DE VAPEUR

Publication

EP 2684011 A4 20150930 (EN)

Application

EP 12754313 A 20120307

Priority

- US 201161449791 P 20110307
- US 2012028113 W 20120307

Abstract (en)

[origin: WO2012122296A2] An apparatus and method for noninvasively monitoring steam quality and flow and in pipes (12) or conduits bearing flowing steam (14), are described. By measuring the acoustic vibrations generated in steam-carrying conduits by the flowing steam either by direct contact (20) with the pipe or remotely thereto (16), converting the measured acoustic vibrations (32, 34, 36) into a frequency spectrum characteristic of the natural resonance vibrations of the pipe, and monitoring the amplitude and/or the frequency of one or more chosen resonance frequencies (36), changes in the steam quality in the pipe are determined. The steam flow rate and the steam quality are inversely related, and changes in the steam flow rate are calculated from changes in the steam quality once suitable calibration curves are obtained.

IPC 8 full level

G01F 1/66 (2006.01); **G01N 29/036** (2006.01)

CPC (source: EP KR US)

G01F 1/66 (2013.01 - KR); **G01F 1/666** (2013.01 - EP US); **G01N 29/02** (2013.01 - KR); **G01N 29/036** (2013.01 - US)

Citation (search report)

- [X] US 5415048 A 19950516 - DIATSCHENKO VICTOR [US], et al
- [X] US 2007294041 A1 20071220 - LAPINSKI STERLING [US], et al
- [A] US 2006225514 A1 20061012 - CONQUERGOOD STEVE [CA]
- [A] US 2005011278 A1 20050120 - BROWN GREGORY C [US], et al
- [A] WO 2005003695 A1 20050113 - CIDRA CORP [US]
- See references of WO 2012122296A2

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

WO 2012122296 A2 20120913; WO 2012122296 A3 20140424; AU 2012225475 A1 20130926; AU 2012225475 B2 20151029; BR 112013022328 A2 20161206; CN 103930777 A 20140716; EP 2684011 A2 20140115; EP 2684011 A4 20150930; KR 20140019793 A 20140217; US 10309932 B2 20190604; US 2013067992 A1 20130321; US 2016356744 A1 20161208; US 9442094 B2 20160913

DOCDB simple family (application)

US 2012028113 W 20120307; AU 2012225475 A 20120307; BR 112013022328 A 20120307; CN 201280018973 A 20120307; EP 12754313 A 20120307; KR 20137026414 A 20120307; US 201213414457 A 20120307; US 201615237522 A 20160815